

The Absence of Innovations and Slow Productivity Growth in the Real Estate Industry - a Behavioural Explanation

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Abstract

In this paper, we discuss the question how the R&D intensity could be enhanced in the real estate industry and what the main challenges of this process are. We approach this question using a behavioural risk taking approach by March & Shapira (1992, 1987). In addition, we discuss the value added from using a collective R&D program, named a Technology Program, to remedy the issues raised. In the empirical part of the paper we study the structures of past and ongoing Technology Programs in order to test whether our proposed factors, that should enhance the level of risk taking in the industry can be identified as key-drivers in the programs.

Our main finding is that the main function of a collective sponsoring of the R&D activity of an industry (i.e. of a Technology Programme) is not to generate exploration by increasing slack in organisations using public subsidies but to sponsor a collective network to increase the aspiration level of the participating organisations. Thus the Technology Program has a very important networking function, in addition to knowledge sharing, in creating an environment where the aspiration level of the participating firms is raised to induce risk taking in the form of innovative R&D.

Background and Motivation

The real estate and construction industry has lagged behind the productivity growth in many sectors in Finland. The sector is still very fragmented with a number of sub-sectors not very well integrated with each other. Historically, the whole industry has been plagued by quality problems and outdated methods and processes.

Except for the largest corporations, the R&D activity is low compared to most other industries. Low levels of R&D translates to sub-optimal levels of exploration of new business opportunities i.e. to little risk taking in the organisations. Thus much of the stagnation of the industry can be addressed to the inability to renew itself.

The research question of the paper focuses on this dilemma of low levels of R&D and the slow development of productivity. One explanation put forward is that the cyclical nature of the real estate and construction industry has led to a business environment where the common attitude is that either there are not enough resources to develop new business opportunities or then there is no need for experimentation when the market environment is favourable. The result is a low level of exploration of new ideas and an environment with few innovations.

The March and Shapira Model of Variable Risk Taking

In contrast to more normative models to explain propensities to take risks, empirical studies of how organisations and individuals behave, have found that risk preference varies with context. A common observation in these descriptive studies has been that the way organisations and decision makers are ready to accept risky alternatives depend on the situation in relation to some aspiration levels.

The behavioural models, that have attempted to explain this phenomenon (e.g. Cyert and March, 1963 and March 1978), have put forward the notion that choice behaviour is susceptible to changes that are driven by shifts in the focus of attention. A common theme in all these models is that in order to understand how decisions are made in the face of incomplete information we have to focus more on how attention is focussed than on how decisions are made.

Empirical studies point to the fact that there seems to be two critical focal points that divides success from failure. When managers have been asked about such focal points (March and Shapira 1987, 1992), the most frequently mentioned values were a target level for performance (e.g. a level for break-even) and a level for survival. Given these two reference points, the world is divided into three states. Being below the survival point means extinction, being above the survival point but below the aspiration level implies failure while a state above the aspiration reference points indicate success.

The general finding is that if a decision maker is above a performance target, the primary focus is to avoid actions that may lead to a state below the target. The danger of falling below the target dominate attention. The opportunities for gains are much less dominant. The result is that successful managers, i.e. those above their aspiration level, are relatively more risk averse than those below it. This is especially true if the decision maker is just above the aspiration level since focus is only on the dangers of falling below and not on the opportunities to get further away from the target. On the other hand, those that are below the aspiration level, have been found to focus only on how to reach their target, i.e. how to get above their aspiration level. Thus the willingness to take risks will be higher below the aspiration level than above.

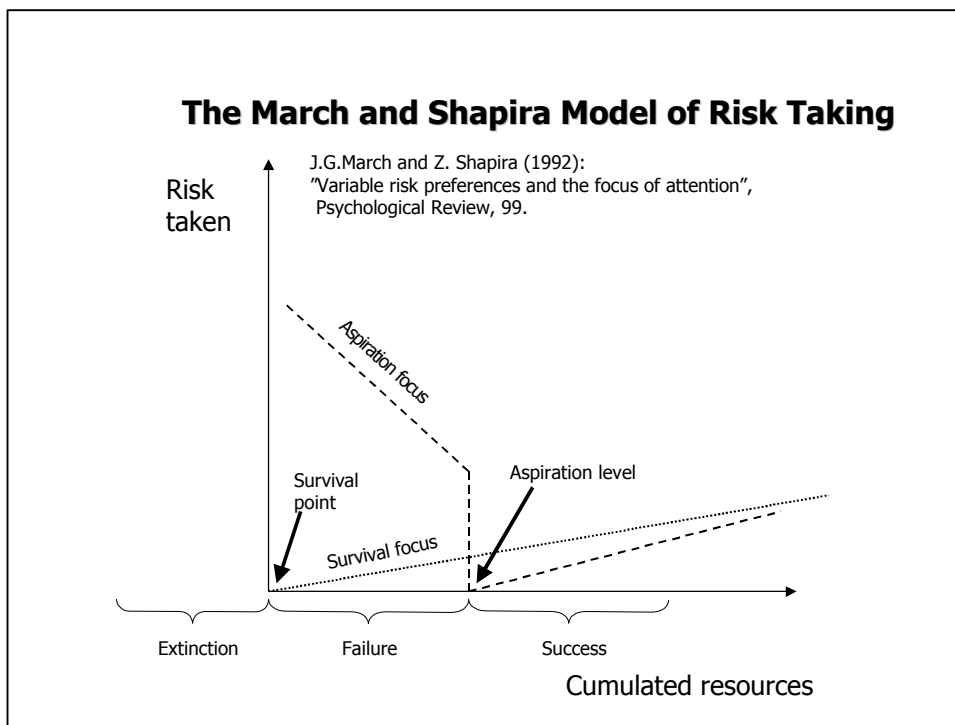
The March and Shapira model predicts that risk taking, i.e. attention to opportunities instead of threats, will occur only when performance exceeds the aspiration level by a

significant amount. I.e. when the performance is way above both the focal points, the model predicts that high –variance alternatives are being sought.

Transforming the behaviour predicted by the March and Shapira model to the way organizations are prone to explore new opportunities in the form of R & D –projects, the model predicts that firms that have been very successful are willing to experiment in this way. Their behavior is not moderated by the danger of either the survival focus or by the aspiration level.

March and Shapira based their model on the above observations of organizational behavior. Their model is depicted in Figure 1. On the horizontal axis we have the total cumulated resources of the risk taken, while on the vertical axis we have risk taking in terms of variance.

Figure 1:



Risk taking depends on both on the amount of current resources and on the history of reaching that amount. In the model, it is assumed that risk taking is driven by two rules. One for situations, above the focal points and one for situations below. Above the two focal points, variability is set so that the risk taker increases with the distance from it. When cumulative resources are below a focal point variability is set so that the propensity to take risk increase with negative distance from the focal point. I.e. the farther you are below your reference point, the greater the risk required to make recovery likely.

March and Shapira put forward two reference points. An aspiration level for resources that adopts to experience and a fixed survival point at which there are no resources. In addition, they assume that the focus of attention shifts between these two points.

In the model, risk taking behavior is sensitive to the decision maker’s position relative to the focal points and whether the decision maker focuses and the survival point is on the aspiration-level point.

Aggregate risk taking behavior in organizations is therefore, according to March and Shapira, affected by three processes:

- 1) the process of the accumulation of resource
- 2) the way in which risk taking is perceived as success and failure
- 3) the way attention is allocated between the two reference points.

A central factor of the model is whether an outcome is considered as success or failure. One factor that affects behaviour, in addition to the three processes mentioned above, is when the aspiration level shifts. While the survival point is assumed to be fixed, the point where failure turn to success may shift on the basis on recent performance. It is not trivial to predict when and under what premises the aspiration level will change. Most likely shifts will have some stickiness so that the aspiration level will follow performance with some lag.

In this paper, we use the March and Shapira (1992, 1987) framework to discuss the question of how the R&D intensity (i.e. exploration of new opportunities) can be enhanced in organisations. In specific we discuss the logic of using subsidies to increase risk taking in organisations. The efficiency of using a construct called a Technology Programme, is explained using the focus of attention on the aspiration level. We begin by giving some insights in the anatomy of Technology Programmes followed by discussion of shifts in aspiration levels as the mechanism to induce experimentation in R&D organisations.

The Anatomy of Technology Programmes

Technology Programs to develop innovative products and processes are an essential part of the Finnish innovation system. These programs, sponsored by the National Technology Agency (Tekes) are characterised by close co-operation between industry, universities and research institutes. Currently there are more than fifty such programs running.

In most European countries, the existence of a publicly sponsored innovation environment is a central tool in the process of enhancing the competitiveness and renewal of the economy. The logic of sponsoring new startup firms as well as existing growing firms is reasonably clear. Every developed country is facing the constant challenge that its industrial base does not renew and transform with the overall change of the global economy.

In Finland, public funds to sponsor R&D activities inside corporations is channelled through a central body called the National Technology Agency (Tekes). The yearly budget of Tekes is about 370 Meuros which account for approximately XX per cent of the overall funds for R&D.

A central tool in the palette that Tekes employs, is a concept called Technology Programmes. Basically they resemble research programmes in other European countries or EU framework programmes. The anatomy is however special in the sense that about half of the funds funnelled through the Technology Programmes go directly to participating firms to sponsor their internal and confidential R&D efforts. The second half of the funds are allocated more traditionally through Universities and Research Institutes.

The latter part of the funds are channelled to applied research projects that are done in co-operation with, and co-sponsored by the corporate sector. The basic rationale behind this more research orientated funding is to strengthen the co-operation behind academic bodies and corporations and to provide a way to commercialise academic research.

The more novel and for our purpose more interesting part is the confidential public funding of corporate R&D activities. The state through Tekes operates in manner quite similar to a Venture Capitalist specialising in early stage financing. Tekes evaluates the business potential of a new concept or product to be developed and provides part of the funding given that the potential appears to be enough to take given the risks.

The difference is that Tekes (i.e. the state) does not take a stake in the business. The project is evaluated on the basis of its success but Tekes will not take ownership in it. The funds are given as grant or loans that can be exited in non-performing circumstances.

A Technology Programme is typically running for five years and the budgets range from 10 to 35 billion Euros. Commonly Tekes sponsors about half of budgets in the projects proposed and thus the total R&D activity in a program is roughly double the amounts previously mentioned.

Shifts in aspiration levels and increased R&D efforts

The common challenge in the Real Estate and Construction Industry has been the low level of R&D efforts. In March & Shapira terms it translates to too low levels of risk taking in the form of exploration of new business opportunities.

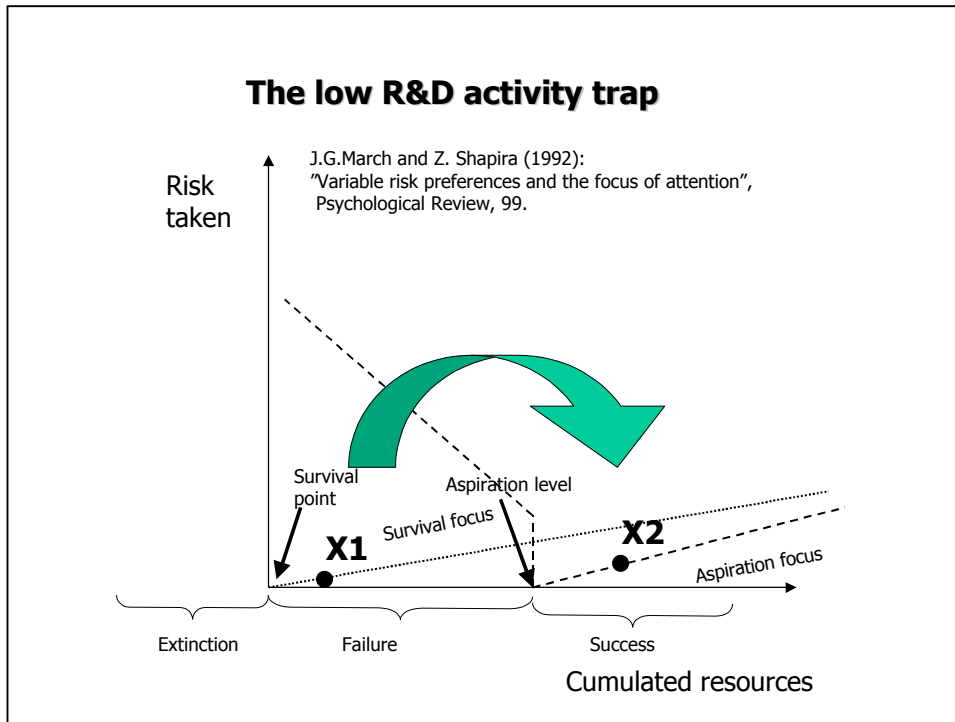
The common explanation for meagre efforts put into R&D has been the cyclicity of the industry. Periods of very high activities followed by extreme downturns has marked the history of the industry. During the downturns resources has been exhausted and during the upswing the increase in activity is so intense and the growth in profits and turnover so large that there are few incentives to explore for new products and services.

It is evident that this common wisdom is a story building upon the elements of the March and Shapira model. It is a process building on cumulated resources, focusing on key reference points and process of shifting attention between reference points. The process is history dependent and it is complex and dynamic.

Using the March and Shapira methodology, we can translate the market insight so that we experience periods of low economic activity when organisations are focusing on keeping the firms' resources above the point of extinction. That is the industry have a survival point focus with a very low level of risk taking. In Figure 1 it would mean to be on point X1.

The low levels of risk taking during the boom periods of the cycle can be interpreted to a shift in the position of cumulated resources to a point above the aspiration level. Such a jump from a point barely above the survival point (point X1 in Figure 1) to a point above the aspiration level can be explained assuming that the cycles change dramatically and there is certain amount of stickiness in the shifts of the aspiration level. Such a situation could result in a focus shift to the aspiration level point and a perception that the cumulated resources are in the domain of success. The result is position X2 in Figure 2 and consequently also leads to a low level of risk taking.

Figure 2



Using the M&S framework it appears logical that cyclical industries may fall into a low R&D level trap where the incentives to explore new business opportunities are low in general irrespective of the economic situation. The low level of R&D leads to a competence trap where the industry lacks the competence to renew itself.

How can we use subsidies to increase the risk taking in such a situation. The traditional way to justify state subsidisation of R&D activities is that the experimentation of firms will benefit the whole industry even if the project itself fails in the form of increased knowledge of the issue. The usual way to think about the effects of subsidies is to think that they increase the slack in organisations that, according to the M&S framework, will induce more risk taking. Giving the firms additional funds to explore new opportunities can be interpreted that the aim is to move the organisations to a point X3 in figure 3.

The innovation system in Finland is built upon a concept where the allocation of R&D funds is combined with a collective effort called Technology Programmes to enhance the awareness of needs to do experimentation and exploration of new products and concepts. The idea with such programmes is naturally to market the funds available, inform the community of the aims of the programme, spread information about state-of-art activities in other markets and create networking among the companies that have received funding.

The most intriguing part is the aim to create a network of the companies participating in the programme. The funds received by companies goes to confidential R&D-projects and the level of publicity of the projects is thus a function of the firms' willingness to share information about their R&D activities.

The paradox has been that the incentives to share information among potential competitors are not apparent. The idea of direct information exchange among the companies thus seems to be far fetched. Most probably, the other firms will learn to know about the projects when they are brought to the markets, which will generally occur towards the end or after the completion of the Technology Programme. Still

there appears to be a substantial positive effect induced by the collective nature of the programme.

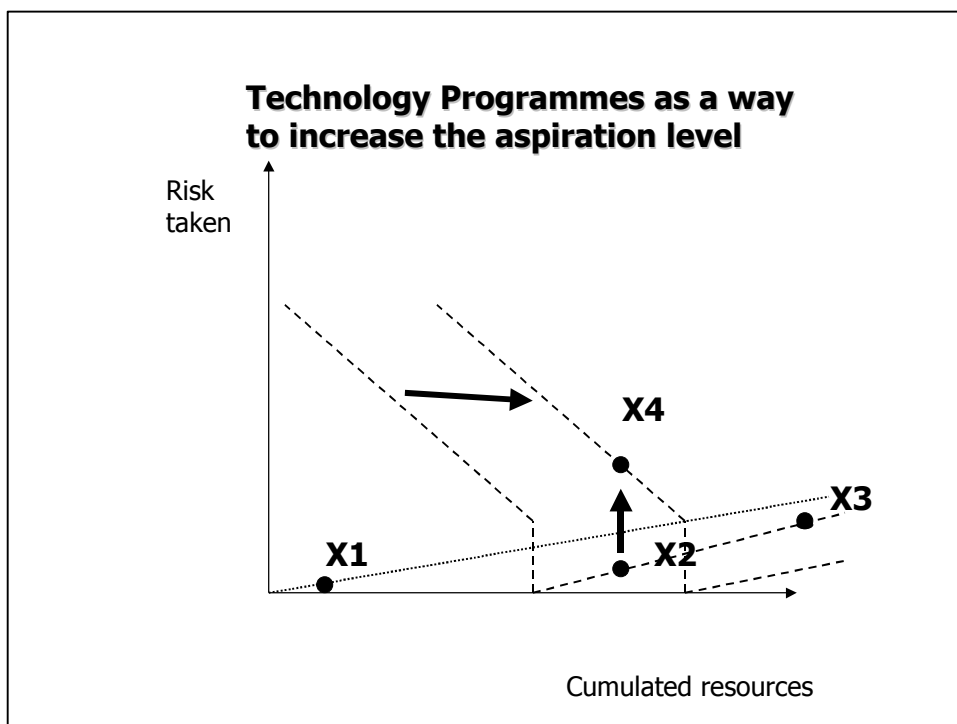
Using the March & Shapira framework, we may, however, understand better what the real function of the programme may be. Instead of thinking of the programme's function to be to induce slack, the main function may be to increase the aspiration level among the companies. An increased awareness of other companies' activities probably results in that the way a decision maker perceives success and failure changes.

If the problem has been that, in cyclical businesses, there is an inclination to treat increases in activities as success too easily, an awareness of other firm's activities may be a significant indicator of what should be deemed to be success. Thus the hypothesis put forward here is that the major effect of a technology programme is to increase the willingness to take risks through increasing the aspiration level of the firms.

The March & Shapira studies have noted that the inclination to take risks increase fast when you fall below your aspiration level, as you focus on the opportunity to reach the target level. The networking dimension of Technology Programmes may thus function to increase the aspiration level. I.e. the effect can be depicted as a change from X2 to X4 in Figure 3. Participation in the Programme actually works through an increase in the target levels for success and in addition to the slack induced by the funds granted.

If this hypothesis is correct, we would see more exploration of new opportunities in the form of R&D activities in situations where the Programme has been able create an atmosphere of friendly competition.

Figure 3



Empirical Findings

Our main insight is that the main function of a collective sponsoring of the R&D activity in an industry (i.e. of a Technology Programme) is not to generate exploration by increasing slack in organisations using public subsidies but to sponsor a collective network to increase the aspiration level of the participating organisations. Thus the Technology Program has a very important networking function, in addition to knowledge sharing, in creating an environment where the aspiration level of the participating firms is raised to induce risk taking in the form of innovative R&D.

So far, we have gathered only anecdotal evidence about the effects of projects where the intention is to raise the aspiration level by inducing a collective sense of competition. Several different modes of initiatives have been put forward to try to induce a situation in which the aspiration level is raised among the companies in the industry.

In the Rembrand Technology Programme (that focuses on Real Estate Managements and Services), for instance, several collective projects were initiated at the start-up phase of the programme. In these projects, ten to fifteen firms from the same industry, many of them in direct competition, were successfully involved in projects that focussed on very fundamental and thus sensitive issues.

Apart from being able to share insights and information as well as having the opportunity to work collectively with outside experts, the projects had the effect of increasing the awareness in the participating firms of the current state as well the future trends in the issue dealt with.

There was a direct increase in the activities among the firms to pursue the matter further inside the companies. As had been one of the initial objectives of these collective projects, several firm-specific R&D projects were subsequently launched. One may thus argue that one important effect of such collective projects is to increase the aspiration level in the participating firms. As this is work in progress, such initiatives will be explored further in the future using a set of Technology Programmes.

Summary

Our main finding was that the main function of a collective sponsoring of the R&D activity in an industry (i.e. of a Technology Programme) is not to generate exploration by increasing slack in organizations using public subsidies but to sponsor a collective network to increase the aspiration level of the participating organizations. Thus the Technology Program has a very important networking function, in addition to knowledge sharing, in creating an environment where the aspiration level of the participating firms is raised to induce risk taking in the form of innovative R&D.

We began the paper by briefly discussing the logic behind the March & Shapira model in explaining risk taking in organizations. Then, we focused on the concepts of exploitation and exploration in relation to R & D activities of an organisation. Our main hypothesis is that the low levels of R&D activities can be explained by a shift of focus from the *survival point* to a point above the *aspiration level* of the organisation due to the cyclical nature of the industry.

In addition, we discussed the value added from using a collective R&D program, named a Technology Program, to remedy the issues raised through increasing the aspiration levels among the participating firms. In the empirical part of the paper we will study the structures of past and ongoing Technology Programs in order to test whether our proposed factors, that should enhance the level of risk taking in the industry can be identified as key-drivers in the programs.

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